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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,120	11/14/2003	David Kleshchik	1586-003	9607

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EXAMINER

CAZAN, LIVIUS RADU

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/713,120	<b>Applicant(s)</b> KLESHCHIK, DAVID	
	<b>Examiner</b> Livius R. Cazan	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. The numbering of the claims is improper. Two claims have been numbered as claim 12. For examination purposes, claims 6-20 have been renumbered as 6-21.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-5, drawn to a method of making an electric heating cloth, classified in class 29, subclass 592.1.

II. Claims 6-21, drawn to a method of making a heating resistive thread, classified in class 29, subclass 611.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination (Group I) does not require resistive threads produced by the process of the subcombination (Group II). Group I could just as well utilize resistive threads that are not produced by dissolving a thermoplastic polymer in an organic solvent and/or using resistive thread having an outer diameter of less than 0.7mm. The subcombination has separate utility such as manufacturing a flexible resistor.

4. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Alex Rhodes on 03/16/2006 a provisional election was made without traverse to prosecute the invention of Group II, claims 6-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-5 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Priority***

6. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in the Russian Federation on 11/15/1999. It is noted, however, that applicant has not filed a certified copy of the PCT/RU99/00435 application as required by 35 U.S.C. 119(b).

***Information Disclosure Statement***

7. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

***Specification***

8. The disclosure is objected to because of the following informalities:

- On page 3, line 20, "1,7:1" should read --1.7:1--
- On page 15, line 12, "field 7" should probably read --field 15--. Otherwise Fig. 8 must be corrected.
- On page 17, line 15, "of present" should probably read --or present--
- On page 19, line 15, "industrial graphite" should probably read --industrial carbon--

The applicant should carefully read the specification and correct any informalities that may still be present.

Appropriate correction is required.

9. The use of the trademarks KEVLAR and NOMEX has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. **Claims 6-21** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 6**, the phrase “a second perpendicular direction” (line 4) is vague/ambiguous and renders the claim indefinite, since it is unclear to what the second direction is perpendicular.

Further, the phrase “a thread” (line 8) renders the claim indefinite since it is unclear whether this thread is part of the plurality of the threads discussed in the interweaving step (lines 2 and 3).

Still further, the phrase “each of said second group” (lines 4 and 5) renders the claim indefinite since, as claimed, it would appear that a plurality of second groups of heating resistive threads are discussed, instead of a single second group, as in line 3.

The phrase “adding an industrial carbon ... a first mixture” (lines 6 and 7) renders the claim indefinite, since, as claimed, it is unclear to what the industrial carbon is added.

The phrase “to remove said organic solvent” (lines 9 and 10) renders the claim indefinite since, as claimed, there is no recited relationship between the coated thread of line 9 and the resistive threads of line 5. Since there is no step reciting the addition of

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the industrial carbon to the solvent, it is unclear how heating the coated thread will remove any solvent.

**Regarding claims 9-19**, the term "about" in each of claims is a relative term which renders the claims indefinite. The term "about" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how closely the recited ratios, thicknesses, speeds, linear density values and temperature ranges must be followed, i.e. the degree to which the particular parameters can fall outside the recited ranges.

**Regarding claims 11 and 19**, it is unclear what is meant by the phrase "gauge" (line 2 of claims 11 and 19). It is unclear whether wire gauge charts apply, and if so, whether the AWG chart or the SWG chart should be used. For examination purposes, the AWG chart will be used, giving a thickness of 0.1426mm for 35-gauge thread. Applicant is urged to specify dimensions in meters or, if applicable, millimeters.

**Regarding claim 9**, "on mass" (line 2) should read --one mass--.

**Regarding claim 10**, "about 2" (line 3) should read --about two--

**Regarding claim 12**, "25 m/sec" should read --25 m/min--

**Regarding claim 13**, "(linear density: 28.6 tex (.0286 g/m))" should read --and a linear density of 0.0286 g/m--

**Regarding claims 16 and 18**, "5 mass part" (line 2) should read --five mass parts-- and "20 mass" (line 3) should read --twenty mass--.

**Regarding claim 17**, “6.5 mass” should read --six and a half mass--. Alternatively, all claims reciting mass parts (i.e. claims 9, 10, and 15-18) should use numerals to specify the number of mass parts, i.e. consistency should be maintained from claim to claim.

**Regarding claim 19**, “15 m/min..” should read --15 m/min.--. Also, “(linear density: to tex (.050 g/m))” should read --and a linear density of 0.050 g/m--. “is pull” should read --is pulled--.

**Regarding claim 20**, the phrases “each of said second group” (line 4), “adding an industrial carbon ... a first mixture” (lines 5 and 6), “a thread” (line 7), and “to remove said organic solvent (lines 8 and 9) render the claim indefinite. See the corresponding discussion regarding claim 6 above. Further, the phrase “said first product” (lines 6 and 7) lacks proper antecedent basis.

**Regarding claim 21**, “claim 19” should read --claim 20--.

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 6 and 9-21** are rejected under 35 U.S.C. 103(a) as obvious over Ohgushi et al. (US4983814; hereinafter “Ohgushi”) in view of Martin et al. (US4600602; hereinafter “Martin”) and Coler (US2683669).



a. **Regarding claims 6, 20, and 21**, Ohgushi discloses:

- Interweaving (see abstract) a first group of non-conducting threads (reinforcing yarns 15 in Fig. 2; see col. 4, Ins. 4-12) arranged in a first direction with a second group of heating resistive threads (heating elements 4 in Fig. 2) arranged in a second perpendicular direction (see Fig. 2), each of said second group of heating resistive threads formed by dissolving a thermoplastic polymer (polyurethane; see col. 6, Ins. 65-68; see “infoplease” reference) in an organic solvent (MEK in example 1 in cols. 10 and 11)
- adding an industrial carbon which is produced from acetylene to form a first mixture, adding a graphite to said first mixture to form a second mixture (see col. 8, Ins. 50-65; see col. 7, Ins. 45-68)
- coating a thread with said second mixture in a spinneret (see col. 8, Ins. 64-68)
- heating said coated thread to remove said organic solvent (see col. 9, Ins. 10-15)

Ohgushi does not disclose employing colloidal graphite per se (although it is likely that some of the recited types of graphite comprise colloidal graphite).

Coler teaches a method forming a plastic material having conductive properties by incorporating acetylene black (i.e. industrial carbon made from acetylene) and colloidal graphite into the plastic (see col. 3, Ins. 45-70).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to apply the invention of Ohgushi using colloidal graphite as taught by Coler, in order to take advantage of the finely-divided nature of colloidal graphite.

Ohgushi does not disclose grinding the mixture of carbon and graphite particles.

Martin discloses a method of forming resistive material by mixing carbon black (acetylene black is an example of carbon black) and graphite particles (see col. 3, ln. 63) with a resin that is dissolved in an organic solvent and teaches ball-milling the carbon and graphite particles (i.e. grinding process) in order to obtain particles of proper size (see col. 4, lns. 25-45). After mixing the carbon and graphite with the solvent, the dispersion is passed through a three-roll mill several times, so as to further grind the particles (see col. 4, lns. 55-68).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to apply such a grinding process as taught by Martin to the carbon/graphite/solvent mixture of Ohgushi, in order to assure proper mixing of the components and to assure that the particles in the mixture are sufficiently small.

b. **Regarding claims 9, 15, and 17**, Ohgushi discloses a ratio of polymer to solvent of 1 to 10, preferably 1 to 3 (see col. 7, lns. 45-55). This range (i.e. 1:3 to 1:10) certainly encompasses the claimed 1:6, 1:6.5, and 1:7 ratios. Further, example 1 discloses using 100 parts of polymer and 540 parts of solvent, which

clearly shows that Ohgushi intended ration falling within the range discussed above.

c. **Regarding claims 10 and 16**, Ohgushi discloses a ratio of 0.33:1 to 1:1 of carbon filler, wherein the ratio of industrial carbon to graphite is 0.25:1, ideally 0.6:1. Therefore, a ratio of industrial carbon to polymer is disclosed (for example a ratio of industrial carbon to polymer of 0.83:1 and a ratio of industrial carbon to graphite of 0.6). Likewise, a ratio of industrial carbon to polymer of 0.25 is disclosed (for example a ratio of 0.42:1 carbon filler to polymer and 0.6 ratio of carbon to graphite within the carbon filler). See col. 8, Ins. 1-20.

d. **Regarding claim 11**, Ohgushi discloses a thread thickness of from 0.1 to 0.5mm (col. 4, Ins. 45-50), which includes the 0.1426mm value discussed in the corresponding rejection under 35 U.S.C. 112, second paragraph.

e. **Regarding claim 14**, Ohgushi discloses heating to a temperature of 120°C (i.e. about 110°C); see example 1.

f. **Regarding claims 12, 13, and 19**, Ohgushi discloses coating the thread at about 20°C (see example 1) and drawing the thread at about 2m/min (see example 1) and having fewer than 60 twists per meter (see col. 5, Ins. 1-10).

Ohgushi does not disclose a twisted glass thread of about 20 gauge (as in claim 19), having a linear density of 0.0286 g/m (as in claim 13) or 0.050 g/m (as in claim 19) and pulled at about 15m/min (as in claim 19) or 25m/minute (as in claim 12).

At the time the invention was made, it would have been obvious matter of engineering design choice to a person of ordinary skill in the art to provide a twisted glass thread as specified above, because Applicant has not disclosed that such a thread provides an advantage, is used for a particular purpose, or solves a stated problem that would not be provided or solved by providing a wire of a different thickness (see rejection of claim 11), having a different linear density, or by drawing the wire at a speed of 2m/min instead of 15 or 25m/m. By claiming various drawing speeds, thread thicknesses, and linear densities, the applicant is admitting that these parameters are not critical factors, especially since the thickness of the coating is controlled by the size of the spinneret opening.

Therefore it would have been prima facie obvious to modify Ohgushi to obtain the invention as specified in claims 12, 13, and 19 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Ohgushi.

14. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohgushi in view of Martin and Coler as applied to claim 6 above and further in view of applicant's admitted prior art (APA).

Ogushi discloses the same invention as the applicant, except for the polymer being polyvinylidene and the solvent being acetone.

APA teaches that polyvinylidene fluoride is a thermoplastic polymer that can be dissolved in acetone and which has a melting point of 160-170°C (page 17, last paragraph).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to replace the polymer of Ohgushi with the polymer of APA in order to take advantage of the fact that it dissolves in acetone, which is commonly available, and to replace the solvent with acetone, in order to allow the new polymer to be dissolved.

Claim 18 is further objected to under 37 CFR 1.75 as being a substantial duplicate of claim 16.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Livius R. Cazan whose telephone number is (571) 272-8032. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571)272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LRC 05/26/2006



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